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FOREST SERVICE - U. S. DEPARTMENT OF AGRICULTURE

PACIFIC SOUTHWEST
FOREST AND RANGE
EXPERIMENT STATION
Berkeley - California

MISCELLANEOUS
PAPER No. 47
MARCH 1960

APR 11 1960
AGRICULTURE

Silk-oak in Hawaii

pest or potential timber?

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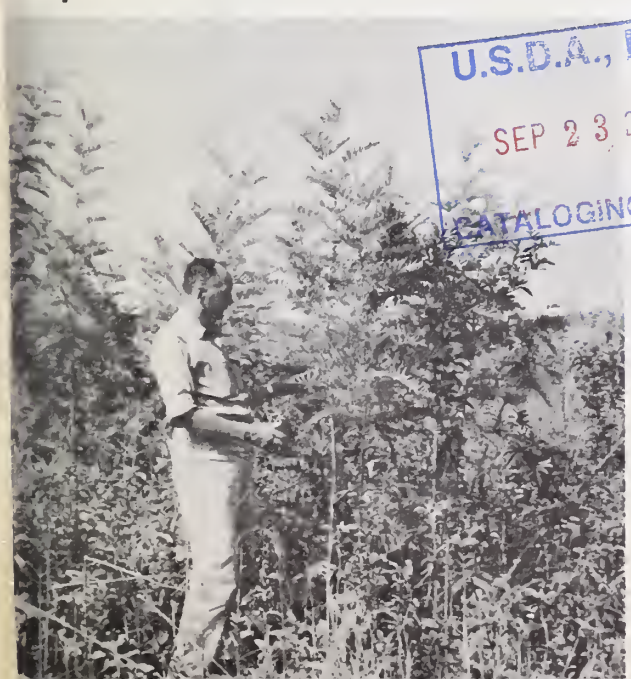
BRUSH. RANGE PEST. NOXIOUS WEED. These are terms ranchers use to describe plants they consider undesirable on their grazing land. In Hawaii, cattle ranchers call the silk-oak tree (Grevillea robusta) by these names and have gone to much expense to eradicate it. But foresters and lumber producers look at this tree in a different light. They see it as a fine forest tree which makes excellent lumber. In fact, they think silk-oak is one of the best timber trees in Hawaii. Watershed managers also consider it an excellent tree for soil stabilization and have planted it in many parts of the Islands.

These contrary viewpoints pose a real problem for land managers. Both meat and wood are much needed commodities in Hawaii. The Islands use more than 100 million board feet of lumber each year, but practically all is imported even though several hundred thousand acres of land are well suited for growing timber. Growing silk-oak as a local source of timber looks like a good opportunity.

Silk-oak is brush to the rancher who bulldozed this area in 1957; he will continue pasture improvement by using herbicides on the 2-year-old silk-oaks and other "weeds".



Across the road, silk-oak is timber to foresters and lumbermen who inspect this 25- to 30-year old natural stand of pole trees and small sawtimber trees which show a high growth potential.

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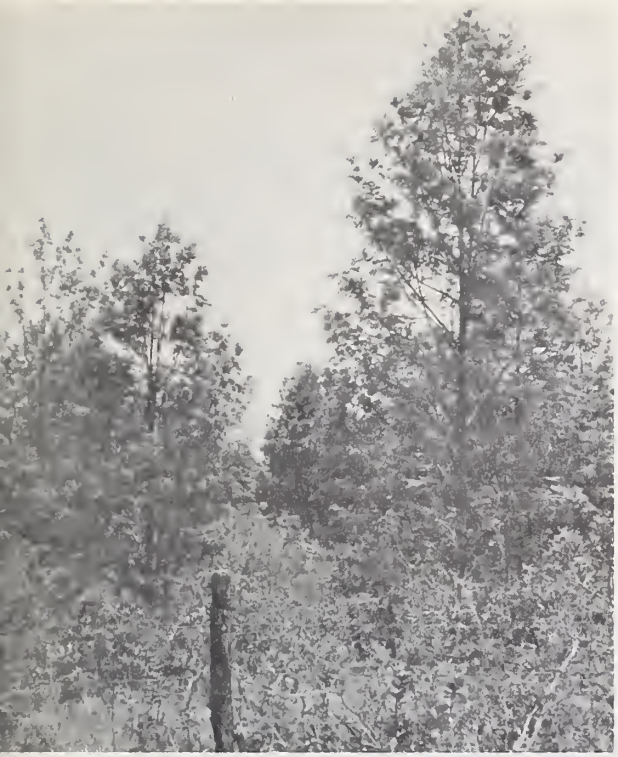
The Opportunity in Planted Forests

The native forests of Hawaii have few timber species of economic importance. Only two, Ohia (Metrosideros polymorpha) and Koa (Acacia koa), occur in sufficient volume to interest timber operators. Koa wood is highly valued for furniture, panelling, and craft products. But the Koa forests are not extensive and few of the trees are good enough for lumber. Ohia, although abundant, has found limited use because the wood is difficult to mill and season and is not suitable for many purposes. The forestry potential of these two species is still in question.

However, many exotic tree species are well adapted to Hawaiian soil and climate. Trials of introduced species began more than 75 years ago. The Division of Forestry in the Department of Agriculture and Conservation and other agencies, as well as private organizations and individuals, have introduced many hundreds of tree species for fuelwood, poles and posts, watershed protection, shade and ornamental uses, and more recently for sawtimber. Only a few have turned out to be promising enough to support a commercial lumber enterprise. Silk-oak is one of these and is adapted to drier sites than most of the others.

Growth rate and form of silk-oak offer an excellent opportunity for timber income. This is a 30-year-old naturalized stand of small sawtimber and pole trees in north Kona.



Young forests of naturally seeded silk-oak: an open stand in the Kau District, and a dense stand in the Kona District, of the Big Island.

Silk-oak Does Well in Hawaii

Introduced from Australia, silk-oak has been planted in many areas on the different islands--on deep soils and shallow, in areas of high and low rainfall and at different elevations. Growth has been good in many locations and exceptional in some.

The light, winged seeds of silk-oak are readily disseminated by the wind, and the species can spread naturally for a long distance from a nucleus of planted trees. Naturalization occurs most rapidly at elevations between 1,000 and 3,000 feet, under a rainfall of 35 to 60 inches, where the soil is deep and well-drained. However, silk-oak also grows and spreads naturally on shallow, rocky soils where rainfall is less than 30 inches.

For timber production, the growth rate and form of silk-oak are excellent. Even open-grown trees tend to grow a straight central stem with few large lateral branches. In dense stands, the trees prune themselves well and develop long clear boles.

A Versatile Wood for Lumber and Veneer

In Australia, silk-oak wood is held in high esteem. It is a beautiful and fine cabinet wood, easy to handle and work: it makes excellent plywood; and it is strong enough for general construction. Some of it is even exported to the United States mainland for furniture manufacture.

Hawaiian Fern-Wood, Ltd. of Hilo has manufactured lumber from a large number of trees grown in Hawaii. Hawaiian silk-oak also is easy to work with and has proved to be very useful for many purposes including panelling, furniture, cabinet work, boxes, and pallets.

Wall panelling for offices and homes in Hilo was milled from these logs at Hawaii Fern-Wood, Ltd. Lower grades of lumber were used for pallets and crates.

Some Problems Unsolved

Although silk-oak is a promising tree for Hawaii, it is not free of problems. Die-back of young tree tops has been observed in some areas. This seriously impairs growth, and affected trees become bushy or limby. The cause has not been determined. Die-back appears to be associated with extended drought, but there may be other causes such as weed-control spray spread by airplanes.

Abundant seed production may be a problem on rangeland. Its ability to spread vigorously poses a threat to some grazing lands; however, many thousands of acres of land in Hawaii have soil and climate well suited for silk-oak but poorly suited for grazing.

To Sum Up

Many acres already are stocked with stands of silk-oak, both planted and naturalized. Some might better be cleared for grazing. Others can produce 25 thousand board feet of silk-oak sawtimber per acre in 35 to 40 years--a return of $30 per acre per year at current stumpage prices. In addition, many acres of idle land, if planted, could grow silk-oak just as rapidly. It is possible, too, that with proper management, silk-oak timber production and grazing would be compatible land uses.

Land owners and managers need facts to help them decide whether silk-oak is a pest to be eradicated or a profitable timber crop to be cultivated. Research will eventually provide such facts, but in the meantime it is important not to overlook the information already available from test plantings and practical experience. These show that silk-oak on the right site can become a potential resource of great value.

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